Game Changing Development

Safe & Precise Landing Integrated Capabilities Evolution (SPLICE)

Active Technology Project (2017 - 2024)

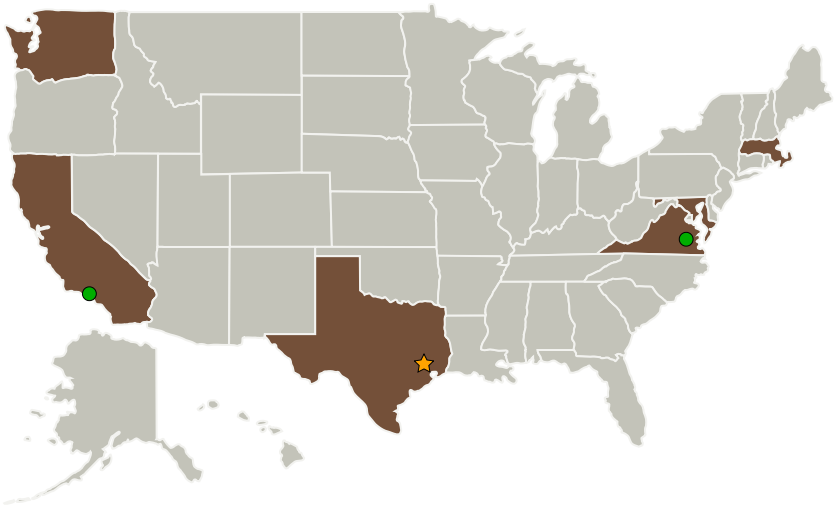
Project Introduction

Develop Precision Landing and Hazard Avoidance (PL&HA) technologies for infusion into 2020's robotic science missions and with a path for follow-on infusion into precursor and human Moon or Mars missions. Develop a multi-mission PL&HA Requirements Matrix for a suite of prioritized destinations. Develop sensors, avionics, algorithms and approaches that achieve these requirements. Test PL&HA systems in hardware-based simulations and onboard terrestrial vehicles to assess performance, advance TRL and foster mission infusion.

Anticipated Benefits

Precision Landing technologies will enable landing within 100 meters of selected landing sites on the Moon and Mars. Hazard Avoidance technologies provide real-time identification of rocks, slopes, craters, and other vehicle scale hazards that cannot easily be identified from orbit reconaissance.

Primary U.S. Work Locations and Key Partners



Safe & Precise Landing Integrated Capabilities Evolution

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
●Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
●Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
Texas A & M University-College Station(Texas A&M)	Supporting Organization	Academia	College Station, Texas
The Charles Stark Draper Laboratory, Inc.	Supporting Organization	R&D Center	Cambridge, Massachusetts
The University of Texas at Austin	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	Austin, Texas
University of Illinois at Urbana-Champaign	Supporting Organization	Academia	Urbana, Illinois
University of Washington-Seattle Campus(UW)	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	Seattle, Washington

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Game Changing Development

Project Management

Program Director:

Mary J Werkheiser

Program Manager:

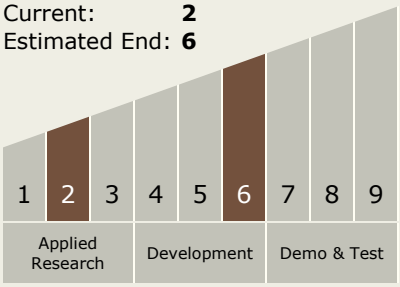
Gary F Meyering

Project Manager:

Ronald R Sostaric

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **6**



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Co-Funding Partners	Type	Location
Armstrong Flight Research Center(AFRC)	NASA Center	Edwards, California
Flight Opportunities(FO)	NASA Program	
Game Changing Development(GCD)	NASA Program	
Goddard Space Flight Center(GSFC)	NASA Center	Greenbelt, Maryland
Planetary Science	NASA Program	

Primary U.S. Work Locations	
California	Maryland
Massachusetts	Texas
Virginia	Washington

Links

New Shepard Suborbital Demo of SPLICE (Video)
(https://www.youtube.com/watch?v=O97dPDkUGg4)

Project Website:

https://www.nasa.gov/directorates/spacetech/game_changing_development/in

Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.4 Vehicle Systems
    - TX09.4.7 Guidance, Navigation and Control (GN&C) for EDL

Other/Cross-cutting:

- TX02 Flight Computing and Avionics
- TX08 Sensors and Instruments
- TX17 Guidance, Navigation, and Control (GN&C)

Target Destinations

The Moon, Mars

Supported Mission Type

Push